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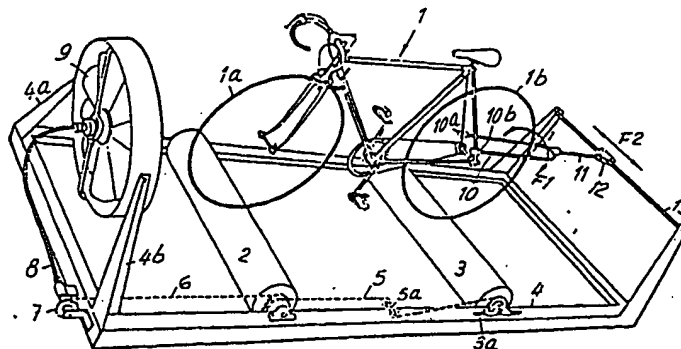
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54 Stand device for holding a bicycle stationary while simulating road running conditions.

57 The involved technical field is that of training appliances for cycling and the application is concerned with a stand device for holding a bicycle stationary while simulating road running conditions. The technical problem was that of providing a device which could simulate with a high degree of verisimilitude road running, and the solution resides in a

structure comprising two supporting rollers (2, 3), one for each wheel, which are kinematically connected to each other and to a fan (9) blowing a flow of air against the bicycle (1), the bicycle (1) being supported on means (10, 11, 12, 13) adapted to heel and move sideways.



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"STAND DEVICE FOR HOLDING A BICYCLE STATIONARY
WHILE SIMULATING ROAD RUNNING CONDITIONS"

This invention relates to a stand device for holding a bicycle stationary while simulating road running conditions.

5 As is known, widely employed are stand devices which can hold a bicycle stationary and allow a person riding it to pedal, they being used both by bicycle racers for indoors training purposes and by anyone who may simply wish to take some exercise.

10 Prior pedalling stands usually include two rotatably supported rollers coupled together to provide support for the rear wheel of a bicycle, which is known to be the drive wheel, thereby on pedalling the wheel will cause the rollers to turn and the bicycle can be kept upright owing to gyroscopic effect.

15 The above-described prior device cannot, however, faithfully reproduce the real conditions of a bicycle running on a road, first because the rear wheel is supported from two areas, which are the areas of tangency to the coupled rollers, instead of one as
20 in actual road travelling, and because the front wheel is left stationary, differently from what would occur on the road; furthermore, the cyclist is not allowed to move transversely and deviate somewhat from a truly vertical stance as is often done in normal
25 conditions of use of a bicycle. The unreal feeling of the exercise is further enhanced by the still air environment.

It is an object of this invention to provide a

stand device for holding a bicycle stationary, which
can simulate with a high degree of verisimilitude
road travelling conditions, so as to afford an
exercise for the user which is profitable from the
5 functional standpoint and performed in a comfortable
environment from the psychologic point of view.

It is another object of this invention to provide
such a device, which can be quite simple construction-
wise, and ensure low cost and the utmost reliability,
10 while being readily adaptable to any size bicycles.

These objects are achieved by a stand device for
holding a bicycle stationary while simulating road
running conditions, according to the invention,
characterized in that it comprises, carried on a floor
15 resting structure, two supporting rollers, one for
each wheel of the bicycle, kinematically connected
to each other and to a fan operative to blow a flow
of air against the front portion of the bicycle,
means being also provided for so supporting the
20 bicycle as to allow it to undergo movements in the
transverse direction and limited deviations from
vertical.

Further features and advantages will be more
readily apparent from the following description of a
25 preferred, though not exclusive, embodiment of the
invention, as illustrated by way of example and not
of limitation in the accompanying drawing, the one
figure whereof shows a perspective view of the
invention.

Making reference to the drawing figure, shown at 1 is a bicycle arranged to bear with its front wheel 1a on the roller 2, and with its rear wheel 1b on the roller 3. Said rollers, which are carried on the floor resting structure 4, are connected kinematically together by a drive chain 5 with a 1:1 drive ratio, thereby they will turn at the same speed, and have sufficient inertia to keep turning for an appreciable time after pedalling is discontinued. Thus, the bicycle wheel gyroscopic effect is maintained, and the bicycle can be kept in position.

The roller 3 may be secured at different locations on the structure 4 by virtue of its supports being slidable along slots, such as 3a, thereby the stand can be adapted to accommodate different size bicycles. A chain tensioner 5a keeps the chain 5 tensioned at any positions of the roller 3.

From the shaft of the roller 2, the drive chain 6 derives the motion for a pinion sprocket 7 at the end of a flexible cable 8 which transmits the motion to a fan 9 carried on uprights 4a and 4b of the structure 4 with its blades facing the front portion of the bicycle.

The bicycle supporting means which enable it to move in a transverse direction and heel somewhat, comprise a fork 10, having clamps 10a and 10b for attachment to the frame tubes and being connected for rotation according to the arrow F1 to a small rod 11 extending from a slider 12 associated with

a crosswise slideway 13 for translation therealong in the direction of the arrow F2.

5 It may be appreciated from the foregoing description that the device of this invention can very closely simulate conditions actually experienced during road travelling. In fact, the two wheels of the bicycle are both kept moving and each of them rests at a single location, exactly as in running on a road, while the user is swept during the exercise by an air
10 flow which increases proportionally with the pedalling rate.

Approximation to real road running is further enhanced by the bicycle supporting means enabling the user to move sideways and heel, thus affording the possibility
15 of introducing variety in the exercise as may be useful for a proper psychological attitude. This effect may be intensified by the provision of a screen adapted to show to the user relaxing representations.

The invention as disclosed is susceptible to
20 many modifications and variations without departing from the true scope of this inventive idea. Thus, as an example, the fan may be located close to the base of the floor resting structure, so as to be driven through a simplified kinematic train, in which case
25 its delivery end will include an air duct directing the air flow against the front of the bicycle; moreover, said fan may be driven by an electric motor with a rheostat connected to the pedal movements, or by a hydraulic motor operated through a pump connected to
30 the pedals. The rollers supporting the bicycle wheels

may be provided with some means of changing rolling resistance, thus providing a range of operating conditions for the device.

5 It is also contemplated that the floor resting structure may comprise several modules assembled together in any desired manner, so that space requirements can be reduced by disassembling the device when not used.

10 In practicing the invention, all of the details may be replaced with other, technically equivalent, elements; the materials used, as well as the shapes and dimensions, moreover, may be any selected ones contingent on individual requirements.

CLAIMS

1 1. A stand device for holding a bicycle stationary
2 while simulating road running conditions, characterized
3 in that it comprises, carried on a floor resting
4 structure (4), two supporting rollers (2, 3), one for
5 each wheel of the bicycle, kinematically connected
6 to each other and to a fan (9) operative to blow a
7 flow of air against the front portion of the bicycle,
8 means (10, 11, 12, 13) being also provided for so
9 supporting the bicycle as to allow it to undergo mov-
10 ements in the transverse direction and limited devia-
11 tions from vertical.

1 2. A stand device according to Claim 1, char-
2 acterized in that said rollers (2, 3) are kinematically
3 connected to each other and to said fan (9) by means
4 of drive chains (5, 6).

1 3. A stand device according to one or both of the
2 preceding claims, characterized in that said fan (9)
3 is positioned on said floor resting structure (4) with
4 the blades thereof facing the front portion of the
5 bicycle and is driven by means of a flexible cable (8).

1 4. A device according to one or more of the
2 preceding claims, characterized in that said fan (9)
3 is located close to the base of said floor resting
4 structure (4) such as to be driven through a simplified
5 kinematic train (6), and has at the delivery end thereof
6 an air duct for directing said air flow against the
7 front portion of the bicycle.

1 5. A device according to one or more of the
2 preceding claims, characterized in that said fan (9)

3 is driven by an electric motor having a rheostat linked
4 to the pedal movement.

1 6. A device according to one or more of the
2 preceding claims, characterized in that said fan (9)
3 is connected to the pedal movement by means of a
4 hydraulic circuit.

1 7. A device according to one or more of the
2 preceding claims, characterized in that said bicycle
3 wheel supporting rollers (2, 3) are provided with
4 means of changing rolling resistance to the movement
5 of said wheels (1a, 1b) and of a high inertia.

1 8. A device according to one or more of the
2 preceding claims, characterized in that said rollers
3 (2, 3) can be secured to said floor resting structure
4 (4) at adjustable positions, and that a tensioner (5a)
5 is provided for the drive chain (5) therefor.

1 9. A device according to one or more of the
2 preceding claims, characterized in that said means (10,
3 11, 12, 13) of supporting the bicycle comprise a fork
4 (10) having clamps (10a, 10b) for attachment to the
5 frame tubes at the rear, being connected for rotation
6 about the longitudinal axis to a small rod (11) extend-
7 ing from a slider (12) associated with a slideway (13)
8 carried in a transverse direction by said floor resting
9 structure (4).

1 10. A device according to one or more of the
2 preceding claims, characterized by the provision of
3 a screen for showing representations to the device
4 user.



European Patent
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EUROPEAN SEARCH REPORT

0121186

Application number

EP 84 10 3173

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
Y	CH-A- 137 231 (A. SCHINDLER) * Whole document *	1	A 63 B 69/16
A		3, 4, 7	
Y	US-A-4 082 265 (J.R. BERKES) * Column 4, lines 3-32; figure 6 *	1	
A	DE-A-2 208 948 (K. PSIUK) * Claims 1, 2; page 4, lines 28-30; page 5, lines 1-10; figures 1, 2 *	1, 2	
A	AT-B- 1 261 (W. VON BIELAWSKI) * Claim; figure 1 *	1, 3, 4	
A	FR-A- 633 436 (N. CHAUSSIER) * Page 1, lines 49-51; figure 3 *	3	
A	US-A-3 513 928 (G.L. EMMONS) * Column 2, lines 22-26 *	5, 6	
A	US-A-3 871 648 (R.A. MAURER) * Column 1, lines 18-21, 26-43 *	7, 8	
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 07-06-1984	Examiner CLOT P.F.J.
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			



DOCUMENTS CONSIDERED TO BE RELEVANT			Page 2
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. *)
A	AT-B- 72 695 (A. KOLOWRAT-KRAKOVSKY) * Page 2, lines 54-58; figure 1 * -----	10	
			TECHNICAL FIELDS SEARCHED (Int. Cl. *)
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 07-06-1984	Examiner CLOT P.F.J.
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